

Centre No.						Paper Reference						Surname	Initial(s)	
Candidate No.						1	3	8	0	/	4	H	Signature	

Paper Reference(s)

1380/4H

Edexcel GCSE

Mathematics (Linear) – 1380

Paper 4 (Calculator)

Circle Theorems

Past Paper Questions

Arranged by Topic

Model Answers

Examiner's use only

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Team Leader's use only

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Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Items included with question papers

Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature.

Check that you have the correct question paper.

Answer ALL the questions. Write your answers in the spaces provided in this question paper.

You must NOT write on the formulae page.

Anything you write on the formulae page will gain NO credit.

If you need more space to complete your answer to any question, use additional answer sheets.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2).

There are 26 questions in this question paper. The total mark for this paper is 100.

There are 24 pages in this question paper. Any blank pages are indicated.

Calculators may be used.

If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Advice to Candidates

Show all stages in any calculations.

Work steadily through the paper. Do not spend too long on one question.

If you cannot answer a question, leave it and attempt the next one.

Return at the end to those you have left out.

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1.

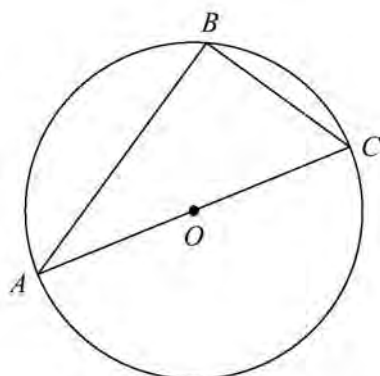


Diagram **NOT**
accurately drawn

A , B and C are points on the circumference of a circle, centre O .
 AC is a diameter of the circle.

- (a) (i) Write down the size of angle ABC .

90

- (ii) Give a reason for your answer.

The angle in a semicircle is a right angle

(2)

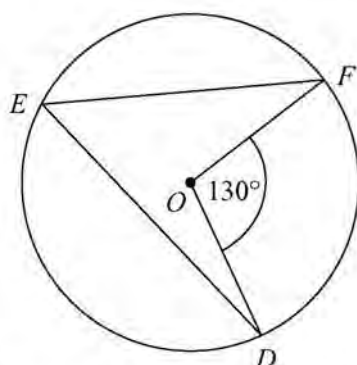


Diagram **NOT**
accurately drawn

D , E and F are points on the circumference of a circle, centre O .
Angle $DOF = 130^\circ$.

- (b) (i) Work out the size of angle DEF .

65

- (ii) Give a reason for your answer.

The angle subtended at the centre of a circle is twice the angle
subtended at the circumference

(2)

Q1

(Total 4 marks)

2.

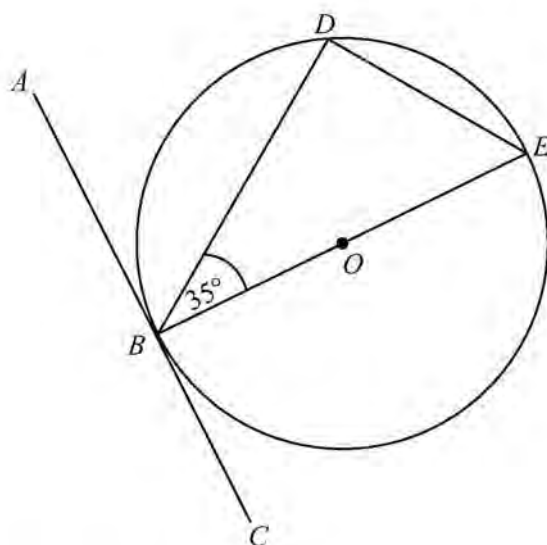


Diagram **NOT**
accurately drawn

B , D and E are points on a circle centre O .
 ABC is a tangent to the circle.
 BE is a diameter of the circle.
 Angle $DBE = 35^\circ$.

- (a) Find the size of angle ABD .

Give a reason for your answer.

Angle ABD is $90^\circ - 35^\circ = 55^\circ$ (The angle between a tangent and the radius drawn to the point of contact is 90°)

..... 55°
 (2)

- (b) Find the size of angle DBE .

Give a reason for your answer.

The angle between a tangent and a chord through the point of contact is equal to the angle subtended by the chord in the alternate segment.

Angle ABD is equal to angle DEB , 55°

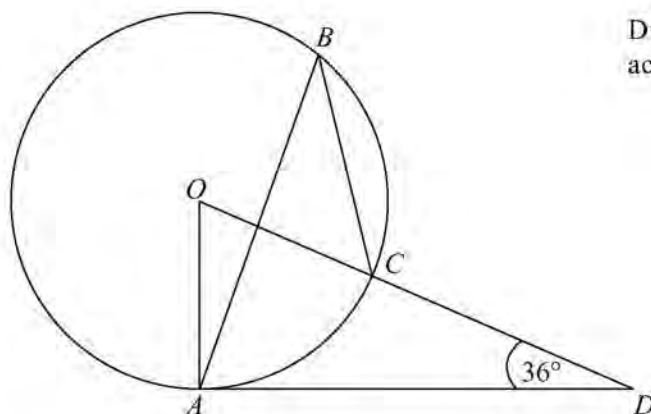
..... 55°
 (2)

Q2

(Total 4 marks)

3.

Diagram **NOT**
accurately drawn



The diagram shows a circle centre O .
 A , B and C are points on the circumference.

DCO is a straight line.
 DA is a tangent to the circle.

Angle $ADO = 36^\circ$

(a) Work out the size of angle AOD .

Angle $DAO = 90^\circ$ (The angle between a tangent and the radius
drawn to the point of contact is 90°)

Angle AOD is $180^\circ - 90^\circ - 36^\circ = 54^\circ$ (Angles in a triangle add up
to 180°)

54 °
.....
(2)

(b) (i) Work out the size of angle ABC .

$$54^\circ \div 2 = 27^\circ$$

27 °
.....

(ii) Give a reason for your answer.

Angle ABC is half of angle AOD (The angle subtended
at the centre of a circle is twice the angle subtended
at the circumference)

(3)

(Total 5 marks)

Q3

4.

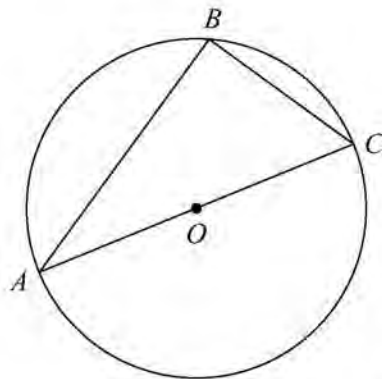


Diagram **NOT**
accurately drawn

A , B and C are points on the circumference of a circle, centre O .
 AC is a diameter of the circle.

- (a) (i) Write down the size of angle ABC .

90 °

- (ii) Give a reason for your answer.

The angle in a semicircle is a right angle.

(2)

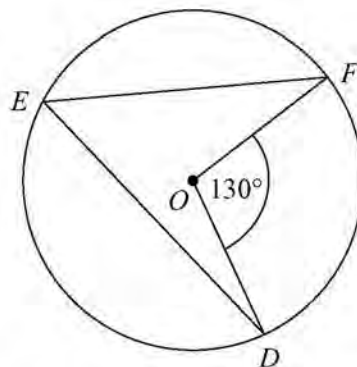


Diagram **NOT**
accurately drawn

D , E and F are points on the circumference of a circle, centre O .
Angle $DOF = 130^\circ$.

- (b) (i) Work out the size of angle DEF .

65 °

- (ii) Give a reason for your answer.

The angle subtended at the centre of a circle is
twice the angle subtended at the circumference.

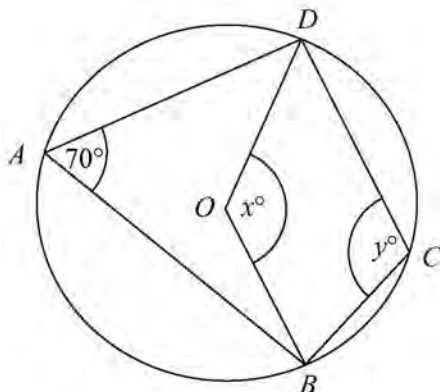
(2)

Q4

(Total 4 marks)

5.

Diagram **NOT**
accurately drawn



In the diagram, A , B , C and D are points on the circumference of a circle, centre O .

Angle $BAD = 70^\circ$.

Angle $BOD = x^\circ$.

Angle $BCD = y^\circ$.

- (a) (i) Work out the value of x .

$$x = \dots 140^\circ \dots$$

- (ii) Give a reason for your answer.

The angle subtended at the centre of a circle is
Twice the angle subtended at the circumference.

(2)

- (b) (i) Work out the value of y .

$$y = \dots 110^\circ \dots$$

- (ii) Give a reason for your answer.

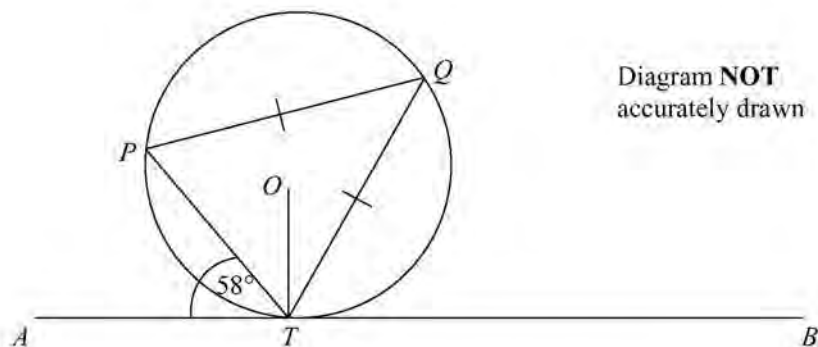
The opposite angles in cyclic quadrilateral add up to 180°

(2)

Q5

(Total 4 marks)

6.



P , Q and T are points on the circumference of a circle, centre O .
The line ATB is the tangent at T to the circle.

$PQ = TQ$.
Angle $ATP = 58^\circ$.

Calculate the size of angle OTQ .

Give a reason for each stage in your working.

$\angle PQT = 58^\circ$ (Alternate segment to $\angle PTA$)

$\angle QPT = \angle QTP = 61^\circ$ (Isosceles triangle, angles add up to 180°)

$\angle QTB = \angle 61^\circ$ (Alternate segment to $\angle QPT$)

$\angle OTB = 90^\circ$ (Tangent to a radius)

$90^\circ - 61^\circ = 29^\circ$

.....29.....

(Total 5 marks)

Q6

7.

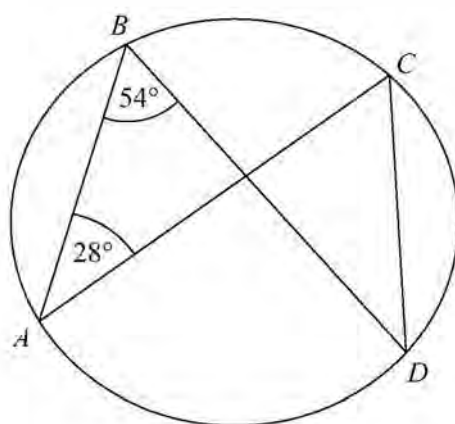


Diagram **NOT**
accurately drawn

A, B, C and D are points on the circumference of a circle.
Angle $ABD = 54^\circ$.
Angle $BAC = 28^\circ$.

(i) Find the size of angle ACD .

54 °

(ii) Give a reason for your answer.

.....Angles subtended by an arc in the same segment.....

.....of a circle are equal.....

(Total 2 marks)

Q7